UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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SFD 8-3

January 23, 2006

Mr. Thomas Macchiarella, Code 06CA.TM
Department of the Navy
Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

RE: Draft Feasibility Study Report, IR Site 27, Dock Zone, Alameda Point

Dear Mr. Macchiarella:

EPA has reviewed the above referenced document which we received on October 23, 2005. EPA requested a 30 day extension on the review period making our comments due on January 23, 2006. We are concerned with the lengthy duration to achieve remedial action objectives of many of the remedial alternatives evaluated in this Feasibility Study. We also find it unclear how the active remedies will address the shoreline groundwater, if at all. In addition, EPA disagrees that Alternative 2 meets the threshold criteria and requests that this alternative be deleted from the draft final document. These and additional comments are enclosed with this letter.

Please call me at (415) 972-3029 to further discuss our comments.

Sincerely,

Anna Marie Cook

Anna-Marie Cook
Remedial Project Manager

enclosure

cc: Andrew Baughman, BRAC PMO West
Marcia Liao, DTSC
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George Humphreys, RAB Co-Chair
Peter Russell, Russell Resources Inc
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EPA Review of the Draft Feasibility Study Report
for IR Site 27, Dock Zone, Alameda Point

General Comments:

1. It is unclear how the active remedies will address the shoreline groundwater, if at all. The bulkhead that runs through Site 27 is a key factor in dividing the salty, high TDS shoreline groundwater from the inland potential drinking water source quality groundwater. Therefore the bulkhead should be a component of the inland and the shoreline groundwater remedies.

2. The alternative that evaluates ICs alone does not pass the threshold criteria for meeting ARARs, (MCLs), and should be eliminated from any evaluation.

3. All alternatives appear unreasonably long in duration with the exception of Alternative 6B. In this FS, the evaluation of the short term effectiveness criterion focuses almost exclusively on risks to workers and residents during implementation of the remedy, but fails to also evaluate the short term effectiveness based on the duration of the remedy before RAOs are achieved. All alternatives, with the exception of 6B, rate poorly in this respect.

4. In analyzing cost, we recommend that the Navy consider the total cost as well as the net present value. For example, the total cost for Alternative 6A is higher than Alternative 6B, but that does not appear to be included in the analysis.

Specific Comments

Executive Summary:

1. **Page ES-1, third paragraph, second sentence:** It was EPA's understanding that data gap sampling for PCBs in the electrical substation and for VOCs and metals in soil and groundwater beneath the OWSs would also be included as part of the FS and the RD for Site 27. Please include these items in this section.

2. **Page ES-2, third complete sentence:** As stated in General Comment #1, the continued maintenance of the bulkhead is critical to the implementation of the remedies for the inland groundwater and for the near shore groundwater.

3. **Page ES-2, Remedial Action Objectives:** EPA does not agree that the RAOs should be only to protect existing uses, but that future beneficial uses should also be evaluated and protected.

4. **Page ES-3, third paragraph, second sentence**: It is unclear what is meant by this sentence. Would ICs be necessary until MCLs are met? Please revise the wording.

5. **Page ES-4, Alternative 2**: ICs cannot be modeled and would need to be in effect in perpetuity. What is really being discussed here is MNA which is Alternative 3. Please see General Comment #2 and delete Alternative 2 from the document.

6. **Page ES-5, Alternative 6B**: The duration for this alternative is missing from the description. The duration has been given for all other alternatives.

7. **Page ES-6, second to last paragraph, last sentence**: Please note that Alternative 2 does not satisfy the threshold criteria for compliance with ARARs and so is ineligible for selection. It should not be carried through the comparison with the other alternatives.

Section 1:

8. **Section 1.1, Purpose, Page 1-1:** The purpose of the Regulatory Agencies is not to review documents and provide comments as stated in the last paragraph on this page, but to provide regulatory oversight to ensure protection of human health and the environment. Please revise the last sentence to provide a more accurate description of the role of the Regulatory Agencies.

9. **Page 1-1, Section 1.1, first paragraph, third sentence**: Please add a sentence after this one that states that data gap sampling to determine whether PCBs are present will be conducted post-FS.

10. **Section 1.1, Purpose, Page 1-2:** The date Alameda Point was placed on the National Priorities List (NPL) is not included. Please include the data Alameda Point was placed on the NPL.

Section 2:

11. **Section 2.3, Remedial Investigation and Other Relevant Investigations and Activities, Page 2-5:** The text of the fourth bullet states that additional characterization at oil water separators (OWSs) OWS-166A and OWS-166B was recommended in the Remedial Investigation (RI) Report, but EPA comments also requested soil and groundwater sampling in the vicinity of OWS-601. The fact that there is no OWS at present in Building 601 is not sufficient to evaluate whether contaminants were released from this

OWS. Please revise the FS to include soil and groundwater sampling in the vicinity of and beneath former OWS-601.

12. **Page 2-12, second full sentence**: We question the purpose of this sentence since the groundwater clearly meets the definition of a Class II aquifer and will be cleaned to MCLs.

13. **Section 2.5.2, Analytical Results from Soil Samples, Page 2-13:** The text of the second bullet indicates that the maximum detected concentration of benzene in soil was 600 micrograms per kilogram (ug/kg), but according to the RI Report, the maximum concentration of benzene was 660 ug/kg. Please resolve this discrepancy.

14. **Page 2-14, fifth bullet**: The fact that arsenic is above MCLs will need to be addressed as part of the remedial action. Background for arsenic is around 3 ug/l, well below the federal MCL, so the arsenic present in the groundwater at Site 27 is due to site activities and an RAO of 10ug/l must therefore be set for the arsenic. The Navy believes that remediating the VOC plumes will serve to reduce arsenic concentrations. Nonetheless, an RAO for arsenic must still be included as part the evaluation of remedial alternatives, and as a performance measure for remedy effectiveness.

15. **Section 2.5.3, Analytical Results from Groundwater Samples, Page 2-14:** The text identifies only 5 VOCs at concentrations above the maximum contaminant levels (MCLs), but 8 VOCs were identified in the RI Report as exceeding the MCLs. In addition to the VOCs listed in bullets 3 and 4, benzene, PCE, and 1,1-dichloroethane (1,1-DCA) also exceeded their respective MCLs. Please revise the FS to state that concentrations of benzene, PCE, and 1,1-DCA also exceeded MCLs.

16. **Section 2.5.3.1, Shoreline Wells, Pages 2-14 and 2-15:** The text states that the concentration of arsenic in groundwater did not exceed the California Toxics Rule (CTR), but the maximum concentration of arsenic (38 milligrams per liter [mg/l]) did exceed the CTR saltwater continuous concentration criterion of 36 mg/l). There are no CTR criteria for beryllium, iron, and molybdenum, so it is not correct to state that they did not exceed the CTR criteria. In addition, the concentration of mercury exceeded the CTR based on the San Francisco Bay Basin Plan. Please revise the text to state that arsenic and mercury were detected above CTR criteria and that there are no CTR criteria for beryllium, iron, and molybdenum.

17. **Page 2-17, first full paragraph, second to last sentence**: Like arsenic, MTBE will need to be addressed as part of the remedial action and the federal MCL of 13 ug/l must be included as an RAO.

18. **Page 2-21, second sentence after first set of bullets**: We continue to think it unlikely that

Sites 19 and 22 would be potential sources for this groundwater plume since the concentrations at these sites are less than those found at the plume hot spots within Site 27.

Section 4:

19. **Page 4-8, Section 4.3.4.2:** Has it been demonstrated that the degradation can continue past VC? This step is critical for MNA to be successfully adopted as a remedial measure.

20. **Page 4-13, first bullet**: Please clarify how the odor threshold can be lower than the detection limit for hydrogen sulfide gas.

21. **Section 4.3.8.4, In-Situ Chemical Oxidation, Page 4-19:** The text of the third paragraph implies that interference from competing reactions is not a factor for Fenton's reagent, but there are more competing reactions when Fenton's reagent is used than there are when potassium permanganate is used. Please revised this paragraph to clarify that competing reactions occur when Fenton's reagent is used.

22. **Section 4.3.8.4, In-Situ Chemical Oxidation, Pages 4-19 and 4-20:** Fire and explosion can occur when Fenton's reagent is used in the presence of flammable vapors in the subsurface. The presence of benzene, pentane, hexane, and other volatile and flammable petroleum compounds in soil and groundwater suggests that this potential exists if traditional Fenton's reagent is used at Site 27. Discussion of the potential for fire and explosion when traditional Fenton's reagent is used will strengthen the case for using modified Fenton's reagent. Please revise the text to include a discussion of the potential for fire and/or explosion and specify that only modified Fenton's reagent can be used.

Section 5:

23. **Page 5-2, Section 5.1.2**: Please delete this alternative from consideration.

24. **Section 5.1.5, Alternative 4B - Sitewide ISB Treatment, MNA, and ICs, Page 5-4 and Figure 5-1, Assumed Treatment Approach for Alternative 4B:** Based on Figure 5-1, one of the two hot spot areas would not be treated, so it is not evident that this alternative would be implemented across the entire site as stated in the text. Please revise Figure 5-1 to include the injection points within the hot spots.

25. **Section 5.1.7, Alternative 6A, Page 5-5:** The number of injection points is not specified as it is for the other alternatives. Please specify the number of injection points.

26. **Page 5-7, Section 5.2**: Please delete the second bullet on this page. Also, the reasons for eliminating Alternative 4B appear to be cost alone since Alternative 6B was retained and has even more injection points (570) than 4B.

27. **Section 5.2, Screening of Remedial Alternatives, Pages 5-7 and 5-8, and Table 5-2, Screening Results for Remedial Alternatives:** The statement that Alternative 8 was eliminated because it is difficult to inject zero-valent iron (ZVI) into shallow groundwater is unsupported. ZVI has been injected into shallow groundwater at Hunters Point Shipyard and other alternatives require injection into shallow groundwater. Further, the ZVI injection pressure can be adjusted. Alternative 8 should be retained unless further justification is provided. In addition, Alternative 4B was eliminated because it was deemed difficult to implement 440 injection borings, but Alternative 6B, which involves 570 injection borings and a second round of up to 285 injection borings was retained. Please retain Alternative 8 or provide better justification for eliminating it. Please also retain alternative 4B or provide a better explanation for its elimination.

28. **Table 5-2**: Please eliminate Alternative 2. What is being evaluated in this table under Alternative 2 is really MNA which is Alternative 3. In addition, please remove phrases such as "MNA would continue at the site, based on lines of evidence." The lines of evidence have not been established, as acknowledged on page 4-6, so it is unknown whether MNA is occurring, or continuing, and certainly this factor counts against selecting MNA as a remedial alternative.

Section 6:

29. **Page 6-1, second paragraph, second sentence**: Please revise to state "Natural attenuation processes may be reducing some VOC concentrations in groundwater..."

30. **Page 6-4, Section 6.1.5, last bullet**: The duration period to achieve RAOs has not been sufficiently evaluated in comparing the alternatives. All alternatives except Alternative 6B take in excess of 30 years to achieve RAOs and so should rate poorly in meeting the short term effectiveness criterion.

31. **Page 6-6, Section 6.3.1.1**: The groundwater footprint subject to ICs prohibiting extraction of groundwater would need to be larger than depicted on Figure 6-1. It would be necessary to ensure that no wells are located outside the plume area that could potentially draw the contaminated groundwater beyond the plume boundaries.

32. **Page 6-7, Section 6.3.1.2**: EPA would require at a minimum annual reviews and reports of the effectiveness of the ICs for all remedies. The additional cost associated with annual reporting, rather than the five year reporting period used in the document, should be factored into all remedies with ICs as a component.

33. **Section 6.3 1.2, Periodic Reviews, Page 6-7; Section 6.3.2.5, Short-Term Effectiveness, Page 6-8; and Section 6.3.2.7, Cost, Page 6-8:** It is not appropriate to assume that ICs would only be in place for 70 years. Since groundwater monitoring is not included in

Alternative 2, it cannot be assumed that attenuation is occurring, attenuation cannot be verified, and ICs must remain in place for perpetuity.

34. **Page 6-7, Section 6.3.2.2**: The logic used in this section is in error in that apparently only action-specific ARARs have been evaluated here. The alternatives have to comply with all ARARs (in this case MCLs).

35. **Page 6-8, Section 6.3.2.4**: Please remove this section, and the entire Alternative 2. What is being evaluated here is MNA. Further, statements such as "passive treatment of chlorinated VOCs through natural processes would continue to occur" are unsubstantiated and should be deleted.

36. **Page 6-9, Section 6.4.1, third bullet**: There cannot be an upward vertical hydraulic gradient at this site and therefore this claim cannot be used as a reason for not considering protection of the deeper aquifer necessary. (See my comment with regard to Site 9 and the Navy's subsequent deletion of this claim).

37. **Section 6.4.1.1, Monitoring Program Design For MNA, Page 6-10:** The FS states that groundwater will be sampled from eight wells, but it is not clear if additional wells are proposed or if the monitoring program design includes only the existing wells. Furthermore, it is not clear that the existing wells at IR Site 27 are adequate to monitor the migration and attenuation of the volatile organic compounds (VOCs). Areas to the north and south of the main axis of the plume are not covered by the existing monitoring network. Please revise the monitoring alternatives in the FS to include additional wells to monitor these areas, or clarify why additional wells were deemed unnecessary.

38. **Section 6.5.1, Description of Alternative (4A), Page 6-12 and Section 6.6.1.1, In-Situ Chemical Oxidation, Page 6-17:** Since amendments will be injected into the subsurface, it is possible that portions of the plume will be displaced, but there are no monitoring wells north and south of the main axis of the plume to monitor displacement. Please revise these alternatives to include installation of additional wells to monitor potential plume displacement.

39. **Page 6-13, first two bullets**: EPA questions the intent of these two bullets. Firstly, hydropunch data yields discrete, rather than average, concentrations and the model should use the highest concentration values to determine the duration of clean up. Secondly, MCLs are ARARs and should be used as the end point calculation for plume clean up. It is not conservative but, rather, required. We are also confused by the sentence immediately following the bullets and would like an explanation of why ICs would be released prior to achieving ARARs.

40. **Page 6-17, Section 6.6.1**: See above comment.

41. **Section 6.7.1.3, Closeout Report, Page 6-22:** The text states that a periodic review would not be required because Alternative 6B has a duration of 2 years, but a Five-Year Review is still required, in addition to the closeout report. In addition, some monitoring beyond the two year period would probably be required to verify that there is no rebound in VOC concentrations.

42. **Page 6-23, Section 6.7.2.5**: The correct logic is applied in this section in evaluating short term effectiveness. The the same logic should be applied to all other alternatives.

43. **Section 6.8.1.1, Remediation System Construction, Page 6-24:** Granular activated carbon (GAC) is not effective for treating vinyl chloride, which is present in groundwater at this site. Since detection of vinyl chloride would be interpreted as break-through, GAC would likely be changed out frequently, which would add to the cost of this alternative. Please revise this alternative to propose treatment that would remove vinyl chloride.

44. **Figure 6-1, Assumed Extent of Institutional Controls:** The extent of institutional controls (ICs) as shown on this figure, appear to extend to exactly the limits of the VOC plume. It appears that if domestic use of groundwater is allowed outside this boundary, wells could be placed close enough to the plume to draw contaminants. Please revise the extent of ICs to provide an adequate buffer to be protective if wells were to be installed just outside the boundary.

Section 7:

45. **Page 7-2, Section 7.2**: Please remove Alternative 2 from this list since it does not comply with ARARs.

46. **Page 7-3, Section 7.3, last paragraph**: Alternatives 4A and 6A, taking 45 and 55 years respectively to achieve RAOs, do not appear to significantly shorten the IC time frame.

47. **Page 7-4, Section 7.5**: Alternative 2 should be removed since it cannot be shown to achieve RAOs and doesn't meet ARARs. Alternative 3 takes 70 years to achieve RAOs and so, even though it is easy to implement, it doesn't satisfy the short term effectiveness criterion from a duration to reach RAOs standpoint.

48. **Page 7-6, Section 7.10**: Please note that Alternative 2 also fails to meet the threshold criteria.

49. **Section 7.7, Cost, Page 7-6:** This section and Table 7-1 rank alternatives according to the magnitude of cost (e.g., low cost ranks low, high cost ranks high); however, from an FS perspective, low cost is more desirable than high cost, therefore the rankings should be reversed.

Additional Comments from EPA's Office of Regional Counsel

1. **Page ES-7, last paragraph and Section 7.10, page 7-6, Comparison of rating of alternatives**. The summary comparison of alternatives is not entirely appropriate at the FS stage; moreover, it is not explained how the comparison was made. It is also misleading: for example, it suggests there is a major difference between Alternatives 6A and 6B, apparently without considering factors such as Alternative 6B's lower total cost. We recommend omitting the summary comparison.

2. **Page ES-6** indicates that all alternatives except for Alternative 1 (no action) meet threshold criteria. EPA disagrees. Alternative 2 (ICs) does not meet ARARs because MCLs will not be achieved. [Same comment for page 7-2]

Section 3, RAOs

3. **Page 3-1, general RAOs**, first bullet: Please remove the phrase "to the extent practicable".

4. **Section 3.4, page 3-7, last paragraph, discussion of dilution**. EPA is not convinced that use of a mixing zone/dilution analysis is appropriate to determine compliance with the CTR numbers that are proposed as RAOs for the shoreline groundwater. We prefer measuring compliance with CTR standards at the point where the groundwater discharges to the surface water.

Section 5: Development and Screening of Remedial Alternatives

5. EPA disagrees with retention of the IC remedy since it will not meet ARARs (MCLs). Additionally, the discussion of the IC remedy relies heavily on MNA. Since MNA/ICs is presented as a separate alternative, it is unnecessary to retain the IC remedy.

6. It is not clear whether the alternatives discussed in this chapter are aimed at the shoreline groundwater as well as the inland groundwater. For example, Alternative 6B, page 5-5, is described as aggressively treating "the entire IR Site 27 inland groundwater plume," but there is no discussion of whether this alternative would also address the shoreline groundwater.

Section 6: Detailed Analysis of Remedial Alternatives

7. **Section 6.3.1.2, page 6-7, periodic reviews of ICs**. EPA does not consider reviews every five years to be sufficient, and would require at least annual monitoring to ensure that ICs are being implemented effectively.

8. **Section 6.3.2.1, page 6-7, Alternative 2, Overall Protectiveness Criterion**. It is unclear how this criterion addresses the general response objective of protecting existing beneficial uses of surface water adjacent to IR Site 27. The same comment applies to other alternatives where there is inadequate discussion of the shoreline groundwater.

9. **Section 6.3.2.2, page 6-7, Alternative 2, Compliance with ARARs**. Elsewhere in the document, MCLs are included as ARARs for the inland groundwater. This alternative will not comply with those ARARs.

10. **Section 6.3.2.7, page 6-8. Alternative 2, Cost**. The cost would have been higher to cover monitoring of the ICs at least annually.

11. **Section 6.5.1, page 6-13.** EPA disagrees with the statement that the regulatory agencies may accept a less stringent end point for ICs if sufficient data are collected to show that attenuation is continuing. ICs would need to continue until MCLs are attained. We have a similar comment for the similar discussion on page 6-17 and 6-24.

Appendix A: ARARs

12. **Page A2-7, and Table A2-2, Page 2, ACLs**. The Navy should consider the new OSWER Memorandum 9200.4-39, Use of Alternative Concentration Limits (ACLs) in Superfund Cleanups, in deciding whether to include ACLs. EPA also questions why the Navy is including the ACL discussion at all – specifically, what are the otherwise applicable concentration limits? Does the Navy consider the CTR requirements to be ARARs for the shoreline groundwater?

13. **Page A2-13, discussion of dilution**. See comment above. Additionally, it is not appropriate to rely on provisions of the California Ocean Plan, which does not apply to the Seaplane Lagoon.

14. **Page A2-16.** It is confusing and inaccurate to refer to the "Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California" as Phase 1 of the Inland Surface Waters Plan" or as the "Inland Surface Waters Plan," as the ISWP was a separate plan that was rescinded by the State Board many years ago in response to a court ruling. EPA generally refers to the document identified as SWRCB 2000 as the "SIP," and would suggest something like the "Toxic Standards SIP" to refer to this document.

15. **Section. A3.2.4.1, page A3-8, ESA**. EPA disagrees with the characterization of consultation regulations as possible TBCs, because TBCs generally refer to nonpromulgated or otherwise not legally-enforceable substantive standards or criteria. EPA nevertheless recommends that consultation regulations be complied with when appropriate.

16. **Table A2-2, page 3.** It is unclear why surface water ARARs are included. We presume it is because the shoreline groundwater may impact surface water. Please clarify.

17. **Table A2-2, page 4.** It is unclear why water quality standards and effluent limitations are discussed. Is it anticipated that there will be a discharge to Seaplane Lagoon? Alternatively, does the Navy consider these requirements to be potential ARARs triggered by migration of contaminated groundwater from the shoreline area to Seaplane Lagoon?

18. **Table A2-3, page 1.** In the discussion of State MCLs, several are identified in the "Comments" column as potentially relevant and appropriate, but the "ARAR Determination" column indicates that they are not an ARAR. This needs to be changed. EPA agrees that the State MCLs are relevant and appropriate for the inland groundwater.

19. **Table A2-3, page 1.** EPA does not consider the sections of the State Water Code to be ARARs, as they are authorizing provisions for the water boards and do not impose requirements that would be applicable or relevant and appropriate to the Navy's CERCLA action. If there are certain requirements established pursuant to these authorities that may be ARARs, e.g. water quality objectives, those requirements, and not the authorizing provisions, should be cited.

20. **Table A2-3, page 2, Basin Plan.** Are beneficial uses other than MUN for groundwater considered to be potential ARARs for the shoreline groundwater?

21. **Table A2-3, page 3, Resolution 92-49.** Does the Navy consider section G to be an ARAR?

22. **Table A2-3, page 3, discussion of the Toxic Standards SIP.** Do any of the remedial alternatives contemplate discharges into Seaplane Lagoon or San Francisco Bay?

23. **Table A2-3, page 4, Resolution 92-49.** It is not necessary to include this requirement twice.

24. **Table A4-1, page 3, staging pile regulations.** These regulations have been incorporated in California regulations at 22 CCR 66264.552(f).

25. **Table A4-1, page 6.** Discussion of the regulations on this page is confusing. Section 66264.90(c) seems to be an exception to or limit on 66264.117, so it seems strange that .117 is not included as an ARAR but .90(c) is.